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National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
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Seattle, WA 98115-0070

June 10, 2002

Daniel M. Mathis
Federal Highway Administration
Evergreen Plaza Building
711 S. Capitol Way, Suite 501
Olympia, Washington 98501

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Act
Essential Fish Habitat Consultation for the Elliott Bridge Replacement Project. (NMFS No.
WSB-01-303)

Dear Mr. Mathis:

The attached document transmits the National Marine Fisheries Service's (NMFS) Biological Opinion (BO) on the proposed Elliot Bridge Replacement Project in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531). The Federal Highway Administration (FHWA) determined that the proposed action was likely to adversely affect the Puget Sound (PS) chinook (*Oncorhynchus tshawytscha*) Evolutionarily Significant Unit (ESU).

This BO reflects formal consultation and an analysis of effects covering the PS chinook in Cedar River, King County, Washington. The BO is based on information provided in the biological assessment sent to NMFS by FHWA and King County on July 11, 2001, as well as subsequent information transmitted by telephone conversations and electronic mail. A complete administrative record of this consultation is on file at the Washington Habitat Branch Office.

The attached BO contains an analysis of the effects of the proposed action on designated critical habitat. Shortly before the issuance of this opinion, however, a federal court vacated the rule designating critical habitat for the ESUs considered in this opinion. The analysis and conclusions regarding critical habitat remain informative for our application of the jeopardy standard even though they no longer have independent legal significance. Also, if critical habitat is redesignated before this action is fully implemented, the analysis will be relevant when determining whether a reinitiation of consultation will be necessary at that time. For these reasons and the need to timely issue this BO, our critical habitat analysis has not been removed from this BO.

NMFS concludes that the implementation of the proposed project is not likely to jeopardize the continued existence of PS chinook or result in the destruction or adverse modification of their



critical habitat. Please note that the incidental take statement, which includes reasonable and prudent measures and terms and conditions, was designed to minimize take. If you have any questions, please contact Barbara Wood of the Washington State Habitat Branch Office at (360) 534-9307.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

Endangered Species Act - Section 7 Consultation
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL OPINION

WSB-01-303

Elliott Bridge Replacement
King County, Washington

Agency: Federal Highway Administration

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region


Approved by: *for*  Date: June 10, 2002
D. Robert Lohn
Regional Administrator

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1.0 INTRODUCTION

This document transmits the National Marine Fisheries Service's (NMFS) Biological Opinion (BO) and Magnuson-Stevens Act (MSA) consultation based on our review of a project to replace the Elliott Bridge in King County, Washington. Elliott Bridge crosses the Cedar River, a tributary to Lake Washington, which drains into Puget Sound (PS) and is located in the PS chinook evolutionary significant unit (ESU). The Cedar River is also essential fish habitat (EFH) for PS chinook and coho salmon.

1.1 Background Information

The Federal Highway Administration (FHWA) concluded that the project proposed by the lead agency (King County Department of Transportation) was likely to adversely affect PS chinook (*Oncorhynchus tshawytscha*) and their critical habitats. The existing bridge is dilapidated and sub-standard for existing traffic conditions. The proposed replacement and realignment will upgrade the bridge to county highway standards and structural capacity. In addition, the new bridge will have a longer span and is designed to lessen an existing constriction of the river channel at the project site.

1.2 Consultation History

The document is based on information provided in the Biological Assessment (BA) and the following written correspondence: On July 11, 2001, the NMFS received a letter initiating formal consultation (dated July 11, 2001) from the FHWA. On July 11, 2001, NMFS received a BA describing the project from Washington State Department of Transportation (WSDOT). On August 15, 2001, NMFS sent a letter to FHWA requesting additional information regarding the proposed project. On January 18, 2002 NMFS received additional information regarding details of the staging area, vegetation removal and revegetation plan, floodplain designation, indirect effects, and chinook redd survey information. Information necessary to conduct formal consultation was assembled by May 4, 2002.

Additionally, numerous telephone conversations, e-mail correspondence, and site visits between staff of NMFS, King County, Ross and Associates, WSDOT, FHWA are documented in the administrative record.

1.3 Description of the Proposed Action

The FHWA proposes to fund, in whole or in part, a project to be constructed by King County. The King County Department of Transportation proposes to replace the Elliott Bridge which spans the Cedar River at the western terminus of Jones Road at approximately river mile (RM) 5.2 located in King County, Washington. The existing 278 feet long bridge will be demolished and replaced by a 410 feet long bridge approximately 1000 feet up river from the existing bridge location. Construction of the new bridge and demolition of the old bridge is expected to take about two years, commencing in the year 2003 and ending in 2004.

The action area includes the Cedar River and adjacent corridor between RM 5.0 and 5.4. Approximately 0.33 acres of riparian trees south of the Cedar River will be permanently removed to construct the south approach road. The 0.33 acre include approximately 66 feet of shoreline and extends roughly 215 feet back from the ordinary high water mark (OHWM). In addition, approximately 2.05 acres of riparian and floodplain will be rehabilitated. The first site is the portion of land south of the project area along Jones Road and north of the river corridor in the area of the proposed bridge alignment. Two existing houses will be removed along with the removal of riprap along the north side above the OHWM. The second site includes the north and south approach roads in the project area at the existing bridge site. Approximately, 0.55 acre of fill will be removed at the existing bridge site, and replanting of all disturbed areas. The following is a brief description of the proposed construction activities in the order that they would occur.

1.3.1 Stormwater Control Construction

King County will construct permanent stormwater control facilities. The new facilities will be constructed to detain all of the stormwater runoff from the project area and treat 140 percent of all new impervious surfaces. The stormwater control system will divert 100 percent of stormwater runoff from south of the bridge mid-span to pretreatment and infiltration swales between State Route (SR) 169 and the Cedar River. The soils on the north side of the river are not suitable for infiltration. Therefore, all of the stormwater runoff from north of the bridge mid-span will be collected and treated for quality and quantity before it is detained in two standard ponds. The pond located east of 154th Place Southeast and north of Jones Road will discharge at pre-development rates into an existing culvert, which flows into the Cedar River, just east of the project area. The pond located west of 154th Place Southeast and north of Jones Road will discharge at pre-development rates into the new Stewart Creek culvert due west of the project area.

1.3.2 Stewart Creek Culvert Replacement

The existing Stewart Creek culvert system will be replaced. The culvert replacement will take place during the dry season from June to August 15 when flows are low and chinook are absent from the action area. The new north bridge abutment and 154th Place Southeast approach roadway will be constructed in the vicinity of an existing 60 foot long concrete lined open channeled section of Stewart Creek, which is a small creek that flows adjacent to 154th Place Southeast and into the Cedar River. The majority of the creek flows south to the Cedar River in a 36-inch culvert for the entire length of the north approach road, north of Jones Road, and then opens to the concrete bottomed section south of Jones Road.

A 48-inch culvert will replace the current system, with the discharge point into the Cedar River west of its current location. Construction of the new 48-inch 850-foot bypass culvert, will occur in three phases. During phase 1, the lower 770 feet of the new culvert closest to the river will be constructed. A six-by six-foot riprap energy dissipater pad will be constructed at the river bank where the new culvert enters the river. During phase 2, a one-day temporary blockage will be

installed at the inlet of the existing catch basin, where the new culvert will be tied into it. A pump system will pump water from this upstream location down to the next catch basin structure connected to the new culvert system. During phase 3, the last 80 feet of the culvert will be constructed, temporary blockage and pump removed, and the existing culvert flow will be permanently diverted to the new culvert. All work will occur over the course of two weeks and will be complete before August 15 of the first construction year.

1.3.3 Approach Road Construction

Constructing the approach embankments will require approximately 2,500 cubic yards of excavation and 44,000 cubic yards of gravel. The approach embankments will be constructed of gravel from off-site sources, using bulldozers and compaction equipment. The road's surface will be compacted and paved using paving and surfacing equipment and backhoes will install the storm drainage system.

1.3.4 Pier and Abutment Construction

Pier and abutment construction will occur above the OHWM and will take approximately 12 weeks between May 1 and October 15. The drilled shaft foundation excavation will extend approximately 40 feet below the river level and will encounter hyporheic and ground water. Steel casings will be driven into the ground and a curtain wall on the river side of the shaft excavation areas will be constructed using a chain link fence with temporary construction fabric placed on the inside of the fence. These measures will help contain the drilling spoils generated during the construction of the center pier and north abutment, and isolate the excavation area from the river. Excavated spoils from the drilled shafts will be removed from the project site the same day as drilling activities. The curtain wall will allow the pier shafts to be excavated with an auger and the spoils to be collected on the side of the drilled shafts away from the river.

1.3.5 Bridge Construction

Instream work will consist of the bridge construction and will occur after pier and abutment construction is complete. Cranes will be set above ordinary high water near the pier and abutments to put the girders in place. Trucks will pour concrete on-site to form and cast the new concrete bridge deck in place. A hammock will hang below the bridge to prevent accidental spills into the water.

1.3.6 Existing Bridge Demolition

The existing bridge will be demolished after the new one is built. Demolition will be scheduled the second construction year between mid-July and late August when the chinook salmon are expected to be absent from the project area. Demolition activities will take approximately two weeks to complete.

Initially, power lines running along the west side of the bridge will be temporarily relocated. A

temporary rolling work platform, made of steel beams, aluminum gridding, and plywood will be hung underneath the bridge to catch any debris that might fall during demolition. Asphalt will be peeled off by a front-end loader. The corrugated metal bridge decking and guardrail will be removed and cut into smaller pieces and hauled away.

Steel frame of the bridge will be removed through a series of steps. A 10- by 30-foot mud sill will be graded landward of the OHWM on the north side of the river mid-span directly underneath the truss. A temporary shoring tower made of wood and steel will be built to support half of the bridge. Vertical columns will be installed on the mud sill to support the mid-span of the bridge. Each half of the bridge will be fully wrapped in canvas, and the bridge will be cut mid-span. A crane staged on the north road will pick up the north section of the bridge and swing it on to the north road. The steel sections of the bridge will then be cut and hauled away for disposal. The crane will be driven to the south side of the bridge (over the new bridge). Staged on the south road, the crane will pick up the southern half of the bridge and swing it onto the southern approach road. The steel sections will be cut and hauled away. Because the bridge structure is coated with lead, a lead abatement plan will be implemented with the removal plan to prevent any lead pollution during the removal of the bridge.

Temporary approach spans and abutments will be completely removed. The timber piling will be removed by pulling with a pincher attachment on a track hoe. The existing pier on the north side of the bridge will be completely removed by excavating around the pier, breaking the concrete into large chunks, and hauling the chunks away for disposal at an approved site.

The existing pier on the south side of the bridge will be partially removed. A sandbag berm will be placed around the pier within the OHWM to isolate flow. A crane staged on the south side outside of the OHWM will lift and hold a curtain over the sandbag berm to prevent any debris from falling in the river. The top part of the pier will then be cut at the OHWM with a pincher attachment to a track hoe, and the base of the pier will be left in the riverbed to maintain the existing scour pool and minimize disturbance to the riverbed. Cutting activities would last no more than one day and will be conducted after the steel trusses are removed and before the chinook spawning season begins.

Finally, cul-de-sacs would be built on either side of the existing bridge site on 149th Avenue Southeast. Asphalt and road fill will be removed between the existing bridge abutments and the new cul-de-sacs. The existing bridge site and existing approach fills will be restored with native riparian vegetation as well. Replanting will occur on approximately 0.55 acres of land at the existing bridge location. The existing road sites between the existing bridge site and the new cul-de-sacs will be regraded and restored with native forbs, shrubs, and trees.

1.3.7 Removal of Houses and Riparian Rehabilitation

The construction contractor will remove the two houses located on the north side of the river. One will be a temporary construction office at the site until the completion of the project in 2005. Standard construction demolition and hauling equipment will be used to complete this

work. The contractor will remove the house according to King County Clearing and Grading permit conditions and other construction contract specifications.

The project will replant approximately 1.2 acres of land on the north bank at the new bridge site. Vegetation will be restored on the properties by removing the bank armor, restoring the bank angle and replanting riparian trees and shrubs. Removing bank armor and replanting with native shrubs and trees will restore disturbed and permanently shaded areas under the new bridge. Shade tolerant species will be planted under the bridge. Riverbanks will be revegetated to create future cover for juvenile rearing habitat.

1.4 Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. [50 C.F.R. 402.02]. The action area also includes the adjacent riparian zone within the construction area and all areas affected by the project including the staging area, catch basins, detention ponds, and roadways.

An offsite preservation area will be included in the action area for listed fish species. Preservation site is approximately 3.54 acres and is located approximately 2 miles up river. It contains mature riparian trees that might supply large woody debris (LWD) in the future for fish habitat complexity in the Cedar River. King County has acquired this property and has committed to preserving it in its present condition.

2.0 ENDANGERED SPECIES ACT

2.1 Status of Species and Critical Habitat

2.1.1 Puget Sound Chinook

PS chinook salmon were listed as threatened under the Endangered Species Act (ESA) on March 24, 1999 (64 Fed. Reg. 14308). Critical habitat for chinook was designated on February 16, 2000 (65 Fed. Reg. 7764).

The following is summary status of the Cedar River chinook salmon taken from the National Environmental Protection Act (NEPA) Environmental Impact Statement (EIS) (NMFS and USFWS 1999) for the City of Seattle Cedar River Watershed Habitat Management Plan (HCP).

PS chinook in the Cedar River Watershed are considered to be genetically original stock. The recent stock assessment WDF et al. (1993) classified the status of Lake Washington chinook salmon as unresolved due to differing viewpoints of state and tribal resource managers. Johnson et al. (1997, cited in the HCP) describe wild PS chinook as relatively stable from 1968 to 1990 with a sharp drop in abundance since that period.

Chinook salmon are anadromous, i.e., they return to their natal streams to spawn, and they are semelparous (die after spawning). In an extensive review of the literature, Healey (1991) used differences in life history patterns to divide eastern Pacific chinook salmon into two broad races: stream-type populations and ocean-type populations. While there is substantial variation in specific life history patterns between and within stocks in each race, it is possible to discern broad, general patterns unique to each race. In North America, spawning populations of stream-type chinook are predominant north of latitude 56 degrees N and in headwater areas of large river systems throughout the species range. Ocean-type populations predominate south of latitude 56 degrees N, except in headwater areas of large river systems.

Cedar River chinook appear to be relatively well-matched with the description for ocean-type chinook. Their natal stream is located well south of 56 degrees N, but is still within the central portion of the range of eastern Pacific chinook populations. (NMFS 1998a, 1998b). Adult chinook enter Lake Washington through the Ballard Locks from late June through September with a peak in late August (Warner, 1998, cited in the HCP).

Chinook spawning behavior is similar to that of other salmonids. The female selects an appropriate spawning location over gravel and small cobble substrate where she excavates the redd. Chinook salmon enter the Cedar River from late August and early-September through mid-November, particularly during rain-storms that swell the river (Cascades Environmental Services, Inc 1991). Chinook spawn soon after entry into the river with the peak spawning period usually occurring in early to mid-October. Spawning occurs in the mainstem of the Cedar River downstream of Landsburg and above RM 1.3, with limited use of the larger tributary streams below the Diversion Dam (HCP, section 3.5).

Chinook eggs in this region typically hatch 2 or 3 months after fertilization. The larval fish, alevins, remain in the gravel for an additional 2 or 3 months, then emerge into the stream as freeswimming fry. There are little data on the precise development rate and emergence timing of Cedar River chinook. In the lower Cedar River, chinook fry have been trapped as early as mid-January and were collected until the trap was removed in mid-July.

No data are available on the specific distribution of Cedar River chinook in PS or the North Pacific. However, harvest data for the Green Hatchery stock indicate that nearly all fish that are taken in sport and commercial fisheries are harvested off British Columbia, the coast of Washington, and in PS. Less than one percent of the fish are harvested off the coast of Alaska (Pacific Salmon Commission, 1996, cited in the HCP). This information suggests that the ocean distribution of Cedar River chinook is likely similar to that described by Healey (1991) for ocean-type populations in this region.

Critical habitat was designated in a final rule (65 Fed. Reg. 7764) for PS chinook and includes the marine, estuarine, and freshwater areas of the Lake Washington basin, including the Cedar River below the present limit to anadromous fish passage at the Landsburg diversion dam. Constituent elements of critical habitat for chinook salmon on the Cedar River include the key riparian functions: shade; sediment; nutrient and chemical regulation; streambank stability; and input of organic material, including leaves and large woody material.

2.2 Evaluating the Proposed Action

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 C.F.R. 402. The NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of (1) defining the biological requirements of the listed species, and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributed to: (1) collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. NMFS must identify reasonable and prudent alternatives for the action if it is determined that the action will jeopardize.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. If NMFS concludes that the action will adversely modify critical habitat it must identify any reasonable and prudent alternatives available.

2.2.1 Biological Requirements

The relevant biological requirements are those necessary for PS chinook to survive and recover to naturally reproducing population levels at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

Biological requirements are defined as properly functioning conditions (PFC) of habitat conditions that are relevant to any chinook life stage. These habitat conditions include all parameters of the matrix of pathways and indicators (MPI) described in NMFS (1996), e.g., water quality, habitat access, flow/hydrology, and riparian reserves.

Information related to biological requirements for PS chinook can be found in Spence, *et.al*, 1996. Presently, the biological requirements of listed species are not being met under the environmental baseline. As a general matter, to improve the status of the listed species, improvements in the functional condition of habitat are needed.

The proposed action might limit the amount of LWD that is available at the proposed site through the removal of mature cottonwood trees. However, the trees will be placed on the banks at the two sites being rehabilitated. There is also the uncertainty that the bridge might disrupt chinook spawning at the site. Although, spawning habitat is not a limiting factor on the Cedar River, and the City of Seattle has obligated that the barrier to anadromous fish at RM 21.4 will be made passable to approximately RM 33 in 2003.

2.4 Environmental Baseline

The environmental baseline represents the current set of basal conditions to which the effects of the proposed action are then added. Environmental baseline is defined as “the past and present impacts of all Federal, State, and private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or informal section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation process” (50 C.F.R 402.02). The term “action area” is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.”

The proposed project is located in the Cedar River watershed in King County. The Cedar River is a Shoreline of Washington State from its mouth to its headwaters, and is locally designated as a conservancy area (King County 1993). The Cedar River Basin is part of the Puget Lowland, extending east from the southern end of Lake Washington to the summit of the Cascade Range, for a total length of approximately 58 miles. The watershed drains an area of approximately 188 square miles. The project area is located in the lower mainstem between river mile (RM) 5.0 and 5.4. The action area provides migration, spawning, and juvenile rearing for PS chinook. The barrier to anadromous fish at RM 21.4 will be made passable to approximately RM 33 in 2003.

Chinook salmon spawn throughout the action area. Suitable spawning habitat is available in the vicinity of the existing bridge; however, the redd data shows no chinook redds in the immediate vicinity of the existing bridge at RM 5.0 in either 1998 or 1999. The nearest redds were approximately 400 feet upstream and downstream about one mile of the existing bridge in 1998. In 1999, a cluster of 20 chinook redds (10 percent of all the redds counted) was observed along the left bank within approximately a 100-foot reach underneath the proposed alignment. (Burton 1999). No redds were counted downstream of the Washington Department Fish and Wildlife (WDFW) fish weir located at RM 6.5 in 2000 and chinook numbers were depressed (53 redds in 2000 compared with 180 redds in 1999). However, Cedar River spawning activity was concentrated in reaches above RM 9 for the survey year 2000. Only three of the 53 observed redds (6%) were located in habitats below RM 10 and the majority (66%) of the observed redds were located in mainstem habitat between RM 14 and RM 18 (Burton et al 2001). The 2001

redd survey counted a total of 390 redds along the mainstem and sidechannel habitats of the Cedar River. There were also 7 redds in Taylor Creek and one redd in Walsh Creek counted in the 2001 survey (Burton, pers.comm. 2002).

2.5 Status of the Species within the Action Area

Summer and fall runs of chinook in the Cedar River spawn from the middle of September through the middle of November (SASSI 1992). The Washington State Salmon and Steelhead Stock Assessment describe the stock as native with wild production (SASSI 1992). Native stocks are indigenous and have not been greatly affected genetically by other non-native stocks. Wild stocks can be of any parentage but must sustain themselves through natural spawning in natural habitat.

Escapement between 1987 and 1991 ranged from 600 to 4,300 fish with an average of 1,900; peak counts during the same time-frame ranged from 100 to 800 fish, averaging 300 per year (SASSI 1992). The stock status is “unknown” but the Muckleshoot Tribe regards the stock as “depressed” and a short-term decline may be developing. Chinook redd counts were surveyed in 1999, 2000, and 2001. Redd counts were respectively, 180 redds, 53 redds, and 398 redds.

Adult chinook salmon use the action area for migration and spawning. Juvenile chinook utilize the action area for rearing from about February through June. During snorkel surveys conducted in April, May, and June in 1998, juvenile chinook were observed rearing upstream of the existing bridge along both banks in the vicinity of the proposed new alignment (directly south of 154th Place Southeast).

2.6 Factors Affecting Species Environment within Action Area

Existing baseline conditions for the Elliott Bridge action area were evaluated using the MPI indicators described in the National Marine Fisheries Service 1996. Depending on the environmental conditions present in the project area, each indicator of habitat functional condition is described as properly functioning, at risk, or not properly functioning.

In the action area, the Cedar River is dis-connected from its original floodplain. Historically, the river in the project area was very dynamic across the floodplain. The river used to bear multiple channels, exhibit braiding, and shifted position often between 1865 and 1936 (King County 1993). Most, if not all, of these river characteristics disappeared by 1989 because of revetment building. Riprap and channel “straightening” has minimized or eliminated features of important habitat complexity.

Presently, the levees in the action area on the left bank are set back from the river. The left and right banks at the new bridge alignment provide good quality overhanging vegetation for adequate rearing habitat for chinook. The river structure and current habitat complexity in the action area provide chinook spawning habitat as well.

Water quality in the lower Cedar River is consistently good. Water temperatures in the Cedar River are properly functioning for chinook. However, non-point pollutant sources such as fecal coliform bacteria and suspended solids from leaky septic systems might impact water quality in areas of high human density along portions of the lower Cedar River (King County 1993). The soft water of the Cedar River intensifies the toxicity of metals that enter the river from stormwater runoff. Copper in particular, is extremely toxic to salmonids. Presently, no treatment of stormwater runoff is provided for any of the existing approach roads or the existing bridge in the project area. Existing stormwater runoff is managed artificially by creating overflow channels and roadside ditches.

The natural disturbance regime is affected in the action area because flow regulation by Seattle Public Utilities has a slight affect on normal flooding patterns that are the driving force for natural processes that support fish habitat including channel migration, bed load transport, localized landslides, recruitment of LWD, and local alterations in channel morphology. The City of Seattle's HCP for the Cedar River Watershed signed April 2000 establishes minimum instream flows that NMFS has determined to be sufficient for all species and life stages of salmonids at RM 21.4.

Substrate in the project area consists of clean, loose gravel roughly 25 mm to 100 mm in size and cobbles ranging in size from 100 mm to 256 mm. Smaller gravels and sand are intermixed in the substrate but not firmly embedded. Boulders are infrequently present, usually in the form of riprap in shoreline revetments or at the base of existing bridge piers. Overall, this type of stream substrate is ideal for salmon spawning and meets the NMFS matrix criteria of properly functioning in the action area.

The riparian zones in the action area are not functioning properly. The Cedar River is largely isolated from its historic floodplain and many riparian areas have been destroyed to build homes, pastures, and roads. The presence of arterial roads and revetments within the river's riparian area results in overall lack of functional riparian vegetation in the action area. Existing riparian preservation areas are isolated from each other and many are separated from the river by levees, such as the mature cottonwood riparian forest located along the south bank of the river at the new bridge alignment. The active channel contains no woody debris greater than 24 inches and 50 inches (diameter and length). Therefore, the presence and recruitment of LWD in the action area is not properly functioning. Pool frequency in the action area is not properly functioning at about 3.2 pools per mile; no pools are present under the proposed bridge alignment. Off-channel habitat is currently not properly functioning in the action area because backwater channels and pools are infrequent.

Although no physical barrier is present, the WDFW operates a fish weir in the main stem Cedar River at RM 6.5 during the spawning season for sockeye, which might affect migrating chinook. Stewart Creek is culverted for the majority of its length in the action area and the open stream reach is lined with concrete. It flows into the Cedar River in a hung culvert, therefore it does not provide off-channel habitat for any juvenile or adult salmon.

Refugia is not properly functioning in the action area, because the tributaries of the lower Cedar River such as Maplewood and Madsen Creeks are degraded from upper watershed activities such as commercial and residential development, removal of riparian vegetation and channelization.

More than 90 percent of the streambanks in the action area are stable, partially because of the presence of riprap. Riprap has prevented the establishment of natural vegetation and as a result important habitat features have been lost (such as undercutting and exposed roots that serve as valuable fish habitat).

The Cedar River in the action area is disconnected from its floodplain and side channel habitat by levees. In efforts to limit the extent of residential flooding, levees have been created along the lower basin. Levee creation limits any further migration from channels that normally would occur during a flood. Levees exist in the mature cottonwood stand on the south end of the proposed bridge site. The existing development in the project area prevents the connectivity of the floodplain further than 200 feet back from the river. The levees prevent floodplain connectivity from functioning properly at this time.

Estimates indicate that water diversions and flood control actions have reduced the surface area of fish habitat in the mainstem of the Cedar River (RM 0-21) by 56 percent in the last 100 years (King County 1993). Most remaining habitat has been hydraulically smoothed and confined, and is disconnected from historic floodplains by extensive revetments. This has resulted in a low structural quality complexity.

2.7 Effects of the Proposed Action

The proposed replacement and relocation of the Elliott Bridge (was determined by the FHWA) to be likely to adversely affect PS chinook as determined by the FHWA.

The ESA implementing regulations define “effects of the action” as “the direct and indirect effects of an action on the species or critical habitat together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline.” Indirect effects are those that are caused by the proposed action, are later in time, but are still reasonably certain to occur (50 C.F.R. 402.02).

The proposed bridge replaces an existing bridge with a design that slightly improves channel dynamics, water flow, and floodplain connectivity. The loss of mature riparian vegetation and potential affects to a known spawning area at the new bridge site could reduce the numbers, survival, and distribution of chinook salmon through the alteration and loss of spawning and rearing habitat. The removal of two houses and the rehabilitation of 2.05 acres through the removal of fill and impervious surface, removal of bank hardening, and replanting all reclaimed areas with native vegetation could result in improvement in riparian function in the future. As such, the primary adverse effects of the proposed project are the direct and indirect effects of the construction activities required to remove the existing bridge and replace the existing bridge in a new location.

2.7.1 Direct Effects

Direct effects are the immediate effects of the project on the species or its habitat. Indirect effects result from the agency action and may include the effects of interrelated actions and interdependent actions. Future Federal actions that are not a direct effect of the action under consideration (and not included in the environmental baseline or treated as indirect effects) are not evaluated.

The direct effects are related to the extent and duration of construction activities in or adjacent to the Cedar River which include the permanent removal of 0.33 acres of mature riparian at the proposed new bridge site. The negative effects associated with the proposed project are likely to be short in duration and will be minimized through restrictions in timing of construction and the proposed rehabilitation of 2.05 acres of not functioning ecologically habitat for PS chinook.

Removal of Riparian Vegetation

Riparian vegetation generally links terrestrial and aquatic ecosystems, influences channel processes, contributes organic debris to streams, stabilizes streambanks, and modifies water temperatures (Gregory *et al.* 1991). On small streams, the removal of vegetation might result in increased water temperatures. Loss of vegetation might reduce allochthonous inputs to the stream. Woody debris provides essential functions in streams including the formation of habitats. Additionally, the removal of streambank vegetation can decrease streambank stability and resistance to erosion.

The removal of existing trees could effect chinook in the action area which already lacks a properly functioning riparian forest. Project activities will permanently eliminate 0.33 acres riparian habitat and will permanently preclude revegetation at the new bridge site. However, the removal of existing buildings and replanting disturbed and rehabilitated areas will improve riparian function in the action area. The removed trees will be placed on the restored areas for potential recruitment during high flow events. Also, the removal of riprap in the project area will contribute to natural fluvial processes. Therefore, removing bank armor and replanting with native shrubs and trees will restore disturbed and permanently shaded areas under the new bridge

Disturbance of Channel

Excavation, removal of the existing bridge and channel modification at the existing site could disturb the substrate of Cedar River at RM 5.0. It is unlikely that the instream work will affect spawning habitat although instream work could homogenize the substrate. Additionally, the use of heavy equipment in the riparian areas might cause local compaction of soils resulting in slightly reduced infiltration at the project site. Such compacting could decrease the stability of the banks and reduce recruitment of riparian vegetation, and perhaps lead to increases deposition of fine sediments into the river. To minimize the disturbance of the riparian area and the channel, the contractor will work within the approved fish window and within the flagged work area.

Water Quality

The expected negative effects associated with grading, excavation at the existing bridge site, the back-filling and removal of the structures (i.e., two houses, existing bridge) might include temporary increases in turbidity and sediment levels during construction. The turbidity standards for water quality might be exceeded for short pulses of time during construction. Short term negative effects include deposition of fine sediment that can temporarily degrade instream spawning habitat, and loss of intergravel cover for fish from increased sediment levels (Spence *et al.* 1996). Elevated turbidity levels that can reduce the ability of salmonids to detect prey and can cause gill damage (Sigler 1980; Lloyd *et al.* 1987). Additionally, short-term pulses of suspended sediment have been shown to influence territorial, gill-flaring, and feeding behavior of salmon under laboratory conditions (Berg and Northcote 1985). These potential negative effects will be minimized through recommended restrictions in timing of construction and the use of erosion control measures identified in the BA, which are captured in terms and conditions of this BO. It is expected that listed species will not be present during construction. Overall, the increased turbidity and potential fine sediment deposition are not expected to influence the environmental baseline over the long term.

2.7.2 Indirect Effects

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects might occur outside of the area directly affected by the action. Indirect effects might include other Federal actions that have not undergone section 7 consultation but will result from the action under consideration. These actions must be reasonably certain to occur, or they are a logical extension of the proposed action.

Changes in Fluvial Transport and Channel Morphology

The replacement of the existing bridge with a longer bridge will improve the fluvial transport of sediment and LWD, which is important in the formation of diverse habitats. The new bridge will provide 6 feet of vertical clearance above the 100-year flood elevation. The new bridge will reduce the likelihood and the extent of catastrophic damage to aquatic habitat by lowering erosive velocities during peak floods. The addition of 2.05 acres of rehabilitated riparian area might provide shade, cover, and LWD for river complexity that is needed for juvenile chinook rearing.

Impervious Surface and Stormwater Facilities

There are several adverse effects associated with adding impervious surface such as roads to a watershed. The extent to which chinook detect adverse effects associated with impervious surfaces depends on several factors. Impervious surfaces do not directly affect chinook but indirectly affect them by one or several of the following: degraded water quality, changes in water temperature, or changes in hydrology. As more impervious surface is added to the

watershed, changes in water quality and hydrology are easily detected. Stormwater treatment facilities and other techniques can reduce those changes in water quality and quantity if they are designed with the project.

The proposed project will avoid or minimize adverse changes in hydrology by infiltrating following quality treatment and by creating stormwater treatment facilities designed to detain stormwater generated from the road improvement project. Stormwater detention will minimize disruption of the hydrology of the system, and remove pollutants and fine sediments from surface water. Detention basins will provide some infiltration where precipitation will percolate stormwater to groundwater. Infiltration will reduce elevated surface water temperatures and preserve the hydrology better than detention alone.

2.7.3 Effects on Critical Habitat

The proposed action will affect certain essential features of the PS chinook critical habitat. The NMFS designates critical habitat based on physical and biological features that are essential to each listed species. Essential features of designated critical habitat include water quality, water quantity, water temperature, water velocity, food, riparian vegetation, access, and spawning and rearing conditions for fish. The proposed construction activities will potentially affect riparian vegetation, floodplain, water quality, and water quantity. These effects are expected to be temporary and short term in nature.

The removal of riparian vegetation will have a short term effect on salmonid habitat. Replanting disturbed areas with native trees and shrubs will improve the condition of the riparian habitat in the long-term, reducing, if not avoiding, the effects of the project. The proposed monitoring and maintenance for these replantings ensure long-term restoration of the disturbed riparian area.

All construction activities involving the bank, stream bed, and water column could cause short-term increases in turbidity. Noticeable turbidity plumes are only expected during and shortly after major in-water construction activities. These activities include but are not limited to removal of the existing bridge and bridge piers and abutments. Increased turbidity is not expected to be long-term.

The short-term negative effects on water quality and macroinvertebrate communities will not have lasting effects. Long-term beneficial effects on critical habitat from the proposed action includes the removal of two piers from the river channel and the removal of channel constriction. Replacing the old bridge with a longer span bridge would allow restoration of currently constricted flow.

The increase of 1.41 acre of new impervious surface in the action area is a nominal increase of impervious surface in the watershed. The incorporation of stormwater treatment facilities in this project adequately minimizes effects to local and watershed hydrology. Presently, no stormwater treatment is provided for the existing bridge and roads. Detention basins are designed to simulate pre-construction flows and will provide some infiltration and

evapotranspiration. Disruption of peak flow and base flow conditions are not expected to be significant. Additionally, the widening of the bridge will increase the amount of overwater structure on the Cedar River. However, the structure is higher than the existing bridge and will have a small increase in shade compared to the existing bridge. Therefore, the effects of the new impervious are not expected to result in adverse affects to critical habitat of the Cedar River.

2.7.4 Cumulative Effects

Cumulative effects are defined as “those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation” (50 C.F.R 402.02). Future federal actions that are unrelated to the proposed action are not considered in this section because they may require separate consultation pursuant to section 7 of the ESA

In the action area, the land use is mixed residential, urban, and agricultural. West of the project is urbanized and east of the project is rural. King County proposes to replace the Cedar Mountain Bridge approximately 4.1 miles upstream of the Elliott Bridge. This project area is not connected to the current proposed action. The project lies on the Urban Growth Boundary for the City of Renton. New development might occur at the intersection of the 152nd Avenue Southeast and SR 169; however no building permits have been filed in the last 18 months for the project vicinity. Based on the foregoing analysis, the proposed action is unlikely to contribute to cumulative effects on PS chinook.

2.8 Conclusion

The proposed action is not likely to jeopardize the continued existence of PS chinook or result in the destruction or adverse modification of their critical habitat. The determination of no jeopardy was based on the following: 1) timing restrictions related to in-water construction are expected to minimize potential “take” of fish and their habitat, 2) riparian vegetation removal will be replaced at approximately 5:1 ratio of riparian area, 3) replacement of a longer bridge should improve channel morphology conditions for all life stages of salmonids, and 4) the installation of stormwater facilities will minimize the effects of increased impervious surface added to the Cedar River watershed.

There will be short-term direct impacts associated with the proposed activities. The direct and indirect effects will be minimized through the use of Best Management Practices (BMP) in the design and construction. Overall, the proposed activities are not expected to appreciably reduce the likelihood of survival and recovery of PS chinook.

The cutting of 0.33 acres of riparian forest eliminates a small percentage of the potential recruitment for LWD in the river. The overall project minimization actions, including removal of building, utilization of the removed trees at the project site, and replanting of native vegetation in project areas, plus conservation easements to protect further valuable habitat in the action area, will attempt to restore the juvenile rearing edge habitat and to compensate for LWD

potential lost as a result of the project.

A bridge design that fully spans the river avoids impacts to listed fish species habitat. The project work windows for vibratory construction will prevent disturbance to spawning adults, rearing juveniles and to embryos within the gravel.

Unavoidable impacts will be minimized through rehabilitation of historic floodplain. King County will compensate for unavoidable impacts to riparian forest loss through the removal of two houses, the removal of riprap on approximately 280 ft. of river reach, the replanting of 1.2 acres on the north bank, and the rehabilitation of 0.55 acres at the old bridge site. In addition, King County will protect further habitat loss through the preservation of an additional 3.54 acres of property containing mature cottonwood stands upstream of the site.

2.9 Incidental Take Statement

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined as significant habitat modification or degradation that actually kills or injures to listed species by “significantly impairing behavioral patterns such as breeding, spawning, rearing, migrating, feeding, and sheltering” (50 C.F.R. 222.102). Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such takings is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the effects of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize take and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.9.1 Amount or Extent of Take Anticipated

The proposed action is reasonably certain to result in incidental take through harm of PS chinook. The exact numerical amount of expected take is difficult to determine, and therefore has not been quantified. Instead, the extent of effects on habitat in the action area have been analyzed and Reasonable and Prudent Measures have been developed to address those effects.

2.9.2 Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures (RPM) are necessary and appropriate to minimize incidental take of PS chinook:

1. The FHWA shall minimize take by limiting in-water construction to the time period between July 1 to August 31.
2. The FHWA shall minimize take by taking affirmative steps to avoid or minimize erosion and sediment delivery to water.
3. The FHWA shall minimize take that might arise from vegetation removal.
4. The FHWA shall minimize take that might arise from added impervious surface.

2.9.3 Terms and Conditions

To comply with ESA section 7 and be exempt from the prohibitions of ESA section 9, the FHWA must comply with the terms and conditions that implement the reasonable and prudent measures. The terms and conditions are non-discretionary.

1. To implement RPM No. 1 above, the FHWA shall ensure that in-water construction will be limited to July 1 to August 31. Those provisions are incorporated here by reference, as a Term and Condition of this Incidental Take Statement.
2. To implement RPM No. 2 above, the FHWA shall ensure that BMP erosion and sediment controls are implemented and that conservation measures proposed by the applicant shall be fully implemented at the appropriate phase of construction. Those conservation measures are more fully described in the BA and associated correspondence, summarized in this BO, and are incorporated here by reference, as a Term and Condition of this Incidental Take Statement.
3. To implement RPM No. 3 above, the FHWA shall ensure that the applicant implements the monitoring measures for riparian revegetation described in this document and the BA. The monitoring measures described in those provisions are incorporated here by reference, as a Term and Condition of this Incidental Take Statement.
4. To implement RPM No. 4 above, the FHWA shall ensure the installation of stormwater facilities outlined in the BA and this BO are fully implemented. Furthermore, stormwater facilities shall undergo regular and extensive maintenance measures to ensure its effectiveness in preserving water quality and quantity. Those provisions as summarized in this BO are incorporated here by reference as a Term and Condition of this Incidental Take Statement. King County shall be responsible for maintenance and monitoring of the detention basins after the facilities have been built.
5. To implement RPM No. 2 above the FHWA shall send monitoring reports to document minimization measures during in-water construction (i.e., culvert replacement, existing bridge removal). The reports shall be submitted monthly beginning when the initial in-water construction activities commence until in-water construction activities cease. The

reports shall reference the NMFS WSB number and be sent to National Marine Fisheries Service, 510 Desmond Drive SE, Suite 103, Lacey, WA 98503. This provision is incorporated here by reference as a Term and Condition of this Incidental Take Statement.

2.9.4 Reinitiation of Consultation

Consultation must be reinitiated if the amount or extent of taking specified in the Incidental Take Statement is exceeded, or is expected to be exceeded; new information reveals effects of the action may affect listed species in a way not previously considered; the action is modified in a way that causes an effect on listed species that was not previously considered; or, a new species is listed or critical habitat is designated that may be affected by the action (50 C.F.R. 402.16).

3.0 MAGNUSON-STEVENSON FISHERY CONSERVATION MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2));
- NMFS must provide conservation recommendations for any Federal or State activity that may adversely affect EFH (§305(b)(4)(A));
- Federal agencies must provide a detailed response in writing to NMFS within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall must explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 C.F.R. 600.110). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic

consequences of actions (50 C.F.R. 600.810).

EFH consultation with NMFS is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fisheries Management Council (PFMC) has designated EFH for three species of federally-managed Pacific salmon: chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*), and PS pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Actions

The proposed action and action area are detailed above in Sections 1.3 and 1.4 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook and coho

3.4 Effects of Proposed Actions

As described in detail in Section 2.1.3 of this document, the proposed action may result in detrimental short- and long-term impacts to a variety of habitat parameters. These adverse effects are:

1. Short term degradation of water quality in the action area due to an increase in turbidity during in water construction.
2. Short term degradation of habitat due to removal of riparian trees and vegetation.
3. Long term change in fluvial morphology due to replacement of bridge, removal of buildings, removal of riprap, and bank stabilization through the use of LWD.

3.5 Conclusion

NMFS believes that the proposed actions may adversely affect EFH for chinook salmon and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to Section 305(b)(4)(A) of the MSA, NMFS is required to provide EFH conservation recommendations to Federal agencies regarding actions that would adversely affect EFH. Because the conservation measures that the FHWA included as part of the proposed actions to address ESA concerns are also adequate to avoid, minimize, or otherwise offset potential adverse effects to chinook salmon and coho salmon to the maximum extent practicable, conservation recommendations are not necessary.

3.7 Statutory Response Requirement

Since NMFS is not providing conservation recommendations at this time, no 30-day response from the FHWA is required (MSA) §305(b)(4)(B)).

3.8 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 C.F.R. 600.920(k)).

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